

Algebra/Topology Seminar

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DYNAMICAL SYSTEMS ON CHAIN COMPLEXES

Thursday, November 21, 2019

1:15 p.m. in ES-143

ABSTRACT. In the first talk of this series of two talks, we will discuss how to introduce a notion of “vector field” and its (discrete time) “flow” on any chain complex. The resulting dynamical systems theory allows to replace the chain complex with a “smaller” one of the same homotopy type. In many cases of interest this can be accomplished in an explicit, canonical, and symmetry-preserving manner. In the second talk we will discuss how this theory can be used to construct minimal free resolutions of monomial ideals and of toric rings, thus providing a solution to two long-standing open problems in commutative algebra.